ACS 2023 Surgeons and Engineers: A Dialogue on Surgical Simulation Meeting

Challenges in Surgical Education

Interprofessional Curriculum for Emergency Undocking as a Part of Residency Training - Simulation Models and a Protocol

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Background: General surgery residents are increasingly expected to be proficient in robotic surgery by graduation. Robotic surgery curriculums have been incorporated into residency training to reflect this need; however, there is a dearth of literature describing emergency undocking training as a part this curriculum. For practicing surgeons, curriculums using hydrogel simulation models have been described in the field of Urology and Gynecology. Bleeding during robotic surgery requiring emergency undocking is a high-stakes situation that requires coordination of the interprofessional operating room (OR) team. It is important for surgeons to understand the emergency undocking protocol, communicate effectively with the team, manage the situation, and be confident in their abilities to do so. This requires exposure, repetition, and practice, which should begin during residency training.

Current Challenges: Though robotic curriculums have been implemented most general surgery residency programs, emergency undocking is not commonly incorporated into training. The skills required for docking the robot and performing surgery robotically can be taught with simulation and honed with practice in the OR. Situations that require emergency undocking in the operating room are infrequent, and when they do occur, they are not optimal learning opportunities for a trainee to learn how to manage the situation given the life-or-death nature of the event. Simulation models can expose residents to this high stress situation and provide practice for efficient management of the emergency.

Need of Innovation: We propose an interprofessional curriculum for teaching emergency undocking using simulation models as well as a protocol for emergency undocking to incorporate into general surgery residency robotic training curriculums. The simulation models include a high-fidelity cadaver model with a pump system to mimic a bleeding event as well as a moderate-fidelity explant model. Not only does the curriculum include resident education for simulating a skill that is not commonly encountered, but it also incorporates the other players in the OR including anesthesia, circulating nurses, and scrub technologists given the importance of all team members to work together for the best patient outcome.